

Science and Technology to Advance Regional Security in Central Asia

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*Partnering for Environmental Security Cooperation in Central Asia and the Caspian Basin
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Science and Technology to Advance Regional Security in Central Asia
Nina Rosenberg

This morning I will describe a program that we refer to as STARS, for Science and Technology to Advance Regional Security, in Central Asia. It is a program that is based on cooperative, bilateral and multilateral, science and technology projects. It is our premise that such cooperative projects provide an opportunity for engagement while addressing real problems that could otherwise lead to destabilizing tensions in the region. The STARS program directly supports USCENTCOM's activities and objectives in environmental security. In fact, we think that STARS is a great vehicle for implementing and amplifying USCENTCOM's environmental security objectives and activities. We are very grateful and very pleased to have General DeLong's support in this matter.

I am going to briefly describe the program. I want to stress again that it is a cooperative program. We would like to get input, suggestions, and feedback from the Central Asians here today so we can move forward together.

The timing is excellent for this program. Today there is an increased awareness in the United States of the strategic importance of Central Asia. My colleagues and I at Livermore began a STARS in Central Asia effort a couple of years ago, in mid-2000. When we initially tried to try to get interest and support for this program, often we started by getting out a map and pointing out Central Asia. In the recent months when we have been talking to potential sponsors in Washington there is a lot more interest.

My colleague, Richard Knapp, and I went to Kazakhstan in 2000 to listen and learn about the problems in the region. The first step in our phased approach to this program is to go to the country, talk to the people, and try to identify the problems, the priorities, and importantly, which individuals to talk to. Who are the people we should work with? We meet with government institutions, people from government, people from NGOs (non-government organizations), and people from scientific academic organizations. Livermore staff have also visited Kyrgyzstan and Uzbekistan.

We have received strong support and encouragement from the United States Government recently for this program, which we hope to soon translate into monetary support. On February 14th, 2002, Lawrence Livermore National Laboratory held an education workshop for members of Congress on why regional security in Central Asia is so important, what a cooperative science and technology program might look like, and why such a program is important to do now. Former USCENTCOM Commander General Anthony Zinni, who most people in this room know has been a strong supporter of environmental security, was our keynote speaker. We have the strong support of Congressman Curt Weldon, of Pennsylvania. He is a Republican who serves on the Armed Services Committee. We also have the support of our local Congresswoman, Ellen Tauscher, Democrat, of California. They are working, right

now, to develop the funding mechanisms. We are asking for several million dollars to start a program to fund these projects. Nothing is definite yet, but we are hopeful that we are going to be able to get some serious support for this program. To date, Livermore has been investing its own internal funds to support our projects in the region because we feel strongly that it is part of our global security mission. We have worked on the STARS program, not only in Central Asia, but also in other regions of the world of strategic interest to the United States, such as the Middle East.

So let me start with some of the concepts behind STARS, Science and Technology to Advance Regional Security. As I have stated, it is our premise that such collaborations can contribute to regional security by addressing real problems, which reduce environmental stresses that can lead to regional tensions. We also have some other objectives: helping to reduce illicit smuggling of weapons and drugs, promoting education and welfare in the local population, and providing opportunities for engagement.

And again, this directly supports USCENTCOM's objectives and activities for engagement based on environmental security. We believe that LLNL's combination of science and technology expertise, first-hand knowledge about the region, and long history of involvement with national security matters makes it an excellent partner for USCENTCOM.

What kind of projects are we talking about? First and most importantly, these are collaborative projects. We are not talking about an aid program. We are talking about projects that we work on together in a cooperative manner.

Second, these are science and technology based projects. This is apolitical. We are not talking about the political and activism parts of environmental issues. We are talking very practically about applying science and technology solutions to address problems.

Third, the projects must involve an organization from the United States, it does not have to be Livermore —there are other agencies and universities that we work with as appropriate — and one or more Central Asian states. There are some projects we are talking about that are bilateral and some that are regional, multilateral.

Finally, projects must address the real problems in the following areas: disaster response, environmental quality, natural hazards, border security, and water resources. I am going to review some examples of projects in each of these areas. I will be careful to tell you which projects are ones we are actually working on now, which ones are in the proposal stage (i.e., we have developed the project and are waiting on funding to take the next step), which projects are Livermore's, which projects belong to other organizations, and which projects are just suggestions to help give you ideas of things we might want to do together.

Disaster Response: Let's start with disaster response because that is the main focus of this workshop. It is my understanding that the U.S. National Guard is planning an International Workshop on Emergency Response (IWER), with an emphasis on urban rescue after earthquakes, in Bishkek in the next few months. This is a great example of this type of cooperative project. I believe that all the Central Asian states are invited to participate.

Another STARS project might concern developing emergency response tools. For those of you participating in the emergency response exercises later this week you will get a chance to see a

web-based computer tool that Livermore has developed, which is a way to manage information on environmental threats. It can be also be used to investigate the consequences for planning purposes of environmental threats and as an actual emergency response tool. This is just an idea, a prototype of something we could work on together.

The U.S. Department of Energy has held several workshops on oil spill response in the Caspian area. I think they were in Baku and Tbilisi. The littoral states around the Caspian can work together to develop regional response plans in the event of a major oil spill. What do we need to do to prepare for that? What arrangements do we have to put into place? This is another example of an activity we could work on together.

Environmental quality. I will start this topic by describing a project to benchmark environmental pollution and biological impacts in the Caspian. We have talked to a lot of people from the region and we keep hearing that a major concern is pollution in the Caspian. It is hard to assess the effects of current and future activities without a good baseline, without knowing where you are today in terms of environmental indicators, and in terms of the biological health of the Caspian. So one activity that is a possibility is to work together with the states that border the Caspian on a benchmark study. Other government organizations such as the Caspian Environmental Program are working in this area.

Livermore has developed proposals on three projects on radionuclide contamination that we are looking for financial support to enable us to implement. First is assessing radioactive contamination from Soviet legacy sites. One major problem in the Central Asia states is the radioactive contamination legacy from the Soviet era. One of the areas we have concentrated on is the contamination around Semipalatinsk, which is in the northeast part of Kazakhstan. This was the Soviet Union's equivalent of the United States' Nevada nuclear test site. It is in a similar area geographically, a semi-arid type area, so it has many similarities to the U.S. site.

We have met with scientists and officials from Kazakhstan's National Nuclear Center and Kazakhstan's Ministry for Science and Education, specifically the Institute for Hydrology and Hydrophysics. We have worked out a plan to begin to work together to address the problems at Semipalatinsk that have to do with threats to water resources. We propose to assess the current state of chemical contamination in the area, predict the outcome of these environmental threats, and determine what we can do to mitigate the problem. We are working to develop a proposal for ISTC funding. The International Science and Technology Center promotes non-proliferation among former Soviet Union countries.

A second major problem that we have heard about from our Central Asian partners is waste management pollution at active industrial facilities. We have visited the Ulba Metallurgic Plant, in northern Kazakhstan. We have toured the site, talked to the Deputy Director and his staff, and learned about the nature of the problems there. We have developed a detailed plan to work together, to try to understand the problems, which include leaking waste ponds on the property that are threatening nearby ground water and nearby rivers. Also dried waste from the site threatens air quality in the area. They are dealing with the legacy of past industrial pollution. They are also dealing with a need to improve waste management to maintain their current operations. Ulba is a viable, important plant in Kazakhstan. We have worked with people at the National Atomic Company, Kazatomprom, in Kazakhstan and have developed a detailed plan. We are looking for funding for the World Bank for this project.

Third is the radioactive mine-tailing problem. Central Asia has been an important area for mining uranium and many other materials. Unfortunately this means that mine-related pollution problems are common throughout the region. When uranium is mined, toxic radioactive tailings are left behind. In this part of the world, some of these tailing ponds are not very stable. Some are built right along transboundary rivers, and threaten the rivers and groundwater. We have done several things to try to work together on this problem. Richard Knapp has toured with some of the people here from the Kyrgyz delegation, seeing first hand the mine tailing sites in Kyrgyzstan. We have developed a detailed proposal to pick one site, Kaji-Say, near Lake Issyk-Kul, and to use that as a demonstration area, to implement some mitigation strategies and deal with the problem before it becomes a threat to Lake Issyk-Kul. If we are successful, we could then use these strategies elsewhere. This is a proposal now at our U.S. State Department.

We have also talked about conducting regional technical workshops to share information on our progress with these programs. We recently worked together with a colleague of ours from Kazatomprom to write a technical paper on the mine-tailing problem in Central Asia. Our colleague traveled from Kazakhstan, in January 2002, to present with us the paper at a technical conference in Denver, Colorado. We participated in the conference to learn more about the state of the art on mine tailings.

Natural Hazards: We talked a little about disaster response, now let me talk about planning and mitigating natural hazards ahead of time. We have worked in several parts of the world improving seismic monitoring networks. I am sure people here appreciate and understand that seismic activity is by definition a regional problem.

This picture was taken in Jordan. These are Jordanian scientists installing seismic networks. The photograph was taken by a Livermore person who traveled to the region to help install these monitors. This project was funded on a programmatic project from the Department of Energy.

Floods are common in Central Asia, as a result of snowmelt and runoff in mountainous areas. I don't have any examples of existing or planned projects on floods, but it sounds like it is a good topic to think about, and one of the exercises this week is on a possible flood from Lake Sarez in Tajikistan.

Border Security: This is not traditionally an area you think of as environmental security, but it is related. Livermore has had several funded projects in Uzbekistan on the issue of smuggling, deterring smuggling of nuclear material. We have worked with government officials and scientific organizations in Uzbekistan to equip borders with pedestrian and vehicle portals that will detect radioactive material. We have also worked with our partners in Uzbekistan to upgrade their laboratory capabilities, particularly their mobile laboratory capabilities, so that if you detect a radioactive shipment that you are worried about, you can take it right to the lab and learn more about what it is. There are plans to expand this to other areas and promote workshops and technical exchanges to learn more about how to do this better.

Water Resources: We all know that water resources in Central Asia, water quality and water quantity, are very important. Transboundary water issues are very important in this area. This is an area where we think there is a lot of room for cooperative projects. At Livermore, we have done a lot of work in the southwest and west of the United States; the water experts

there are very familiar with arid zone and semi-arid zone hydrology. We are very familiar with assessing and remediating environmental contamination, not only radioactivity contamination, and we have talked with our counterparts in these countries and have come up with many ideas for projects.

I have emphasized action-oriented activities that involve more than just talking, but there is still a place for workshops. We held a workshop in Almaty, in Kazakhstan last May with Livermore scientists, people from the U.S. Department of Energy and representatives from government and academic institutions in Kazakhstan.. The title of that workshop was *Radioactive Contamination of Water Resources*. We focused on developing solid proposals for real things that we could do. We had visited Kazakhstan previously and identified the different groups and people we thought we might be able to work with on this, and we invited them to the workshop. We broke into small groups and developed projects to move forward with. Some of the projects I talked about earlier were developed at this workshop. We would like to conduct future technical regional workshops on common problems.

Education is also critical. Central Asian scientists told us that they are concerned about the next generation of scientists who are currently being educated. This is consistent with our own observations of the lack of young people present at workshops, conferences, and technical visits. The scientists we have met and interacted with have all been very well trained and well educated, but they are concerned about the next generation. We could work together to provide opportunities for university students, including exchanges with the United States, and support for conferences and training.

I already mentioned a natural hazards project we're working on in the Middle East. I'd like to mention examples of water resources STARS projects we are doing in the Middle East. Water resources are a tremendous problem in the Middle East, and an opportunity for cooperation. We have cooperative projects with the Jordanians, the Israelis and the Palestinians on water resources. We are working to transfer some of our computer simulation expertise and we are working together to improve aquifer management in that region of the world. Livermore scientists have conducted educational demonstrations in Jordan of some simple hydrology concepts. We are working with one of the museums in Jordan to develop and display these educational tools. These activities, which are happening now in the Middle East, are proving to be very successful

Next steps. With respect to STARS in Central Asia, we are working diligently on the funding issues because we all know we can talk all we want, but we need somebody to provide funds to go forward. Today, we ask for your input to this program, your ideas on what you think we should be doing. We would like to hear what you think about this concept in general, but we'd also like to talk about specific projects you are interested in. We would also like to know the names of others you think we should be talking with. We are familiar with some of the major institutions and people in some of the Central Asian states, but for example, we have never been to Tajikistan, we don't know much about that country. I am hoping you can help us with that today.

We invite you to talk to any of the four of us who are going to be here throughout the rest of the week: Richard Knapp and myself from Lawrence Livermore National Laboratories, Curtis Bowling from the Department of Defense, and Lieutenant Colonial Michael Bonadonna from

USCENTCOM. Please talk to any of us throughout this workshop and give us your thoughts. This is a cooperative program and we need to work together. Thank you.

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